Attachment 6

Master Issues List
Oroville Facilities Relicensing (FERC Project No. 2100)

1. Consider adding additional generating capabilities (some existing infrastructure)
2. Intake on North side of dam - Afterbay outlet motoring to provide spinning reserve
3. Use real-time hydraulic projections, inflow/outflow rather than yearly projections
4. PLC upgrades?
5. Coordination with releases from other water storage facilities? - for fisheries protection CVP facilities preventing straying of salmon and steelhead
6. Coordination and evaluation of DF & G, USFWS and other regulatory agencies release requirements to better fit with reality. High agency level decision
7. Potential to use support system models to evaluate different flow regimes with historic and real-time information
8. Why is there no requirement to maintain minimum emergency storage at Lake Oroville? (evaluate needs related to other resources)
9. Any plan to address increasing siltation in lake?
10. Ramping rates effects on downstream facilities
11. Coordinate releases with other water storage facilities for flood release
12. Utilize current watershed hydrologic data from planning (coordinate with COE data gathering)
13. Operational constraints as they relate to other resources
14. Potential physical changes to facility to increase storage and generation. Impacts to existing and potential facilities
15. Evaluate temperature requirements and potential Eng. (?) operational modifications
16. Inequity of power pricing structure
17. Update flood operation manual
18. What are 50-year projections for water/power demands and plans to meet those needs and impacts of meeting demands? (context of existing full allocations)
19. Early warning system for downstream releases
20. Sale of existing water allotments to downstream users
21. Outflow impacts to downstream flood risk (levee stability) COE?
22. Stability of Oroville levee system through low flow section and effects of high flow
23. Evaluate channel capacities and potential need for more storage / flood protection engineering and operations deflection into levees by gravel bars
24. What engineering or other reasonable and prudent solutions are available that would prevent the interbreeding of fall and spring-run Chinook salmon in

the low flow section of the Feather River (migration barrier and /or flow and temperature changes in the low flow section)?

25. Operations and engineering of the project determine the manner and extent water is moved into, through and out of the project area. Current operations, which affect timing, magnitude and duration of flow from current release schedules, pumpback scheduling and maintenance schedules impact both lotic and lentic ecosystems affected by the project. Operations need to be examined and their impacts evaluated and minimized for inclusion into terms and conditions of the settlement.
26. Facility operations and impact – on bass fishery and spawning activities at afterbay. (protect and enhance bass fishery)
27. Sediments behind dam (operations)
28. How does the pump-back operations during the summer months affect water temperatures required for holding and rearing of steelhead and spring-run Chinook salmon in the low-flow section and in the river downstream of Thermalito Afterbay?
29. Project features and operations alter the hydrology of the system, creating the possibility for scour zones within both natural and designed channels. What affects do discharge and ramping rates have on substrate scour and the mobilization of sediments into the water column downstream? How have turbidity levels been affected by project operation?
30. Alterations in stream hydrology affect the natural fluvial geomorphologic processes of a riverine system. How has the change in magnitude, frequency and timing of peak flows on the Feather River affected riparian vegetation recruitment in the low-flow reach and immediately downstream of the Afterbay?
31. Impact of project facilities and operations on fish passage. This includes structures, flows and/or water quality conditions that impede or block passage within and from current and/or historic habitat and operations that impact passage or have the potential to enhance passage. Passage includes movement of spawning or holding adults, emigrating smolts, or movement of juveniles to different habitat areas for purposes of feeding, avoiding predators or sheltering.
32. Adequacy of current instream flow requirements to conserve anadromous salmonids, their habitats and forage. This includes providing a range or schedule of flows necessary to optimize habitat, stable flows during spawning and incubation of ingravel forms, flows necessary to ensure redd placement in viable areas, and flows necessary for channel forming processes, riparian habitat protection and maintenance of forage communities. This also includes impacts of flood control or other project structures or operations that act to displace individuals or their forage or destabilizes, scours, or degrades habitat.
33. Impact of hatchery facilities and/or operations on anadromous salmonids. This includes the direct, indirect and cumulative impacts of hatchery product on anadromous salmonids and the direct, indirect and cumulative impacts of hatchery facilities and operations on salmonids and their habitats.

34. Project structures or operations that either have in the past or continue to introduce predators, create suitable habitat for predators, harbor predators, or are conducive to the predation of salmonids.
35. Impact of project structures and operations on water quality conditions necessary to sustain anadromous salmonids and their habitats.
36. Direct, indirect and cumulative impacts of project facilities and operations on sediment movement and deposition, river geometry, and channel characteristics. This includes impacts on stream competence, capacity, bank stability and extent, duration, and repetition of high flow events.
37. One of the most significant environmental changes caused by the Oroville Facilities Project was changing the nature of this relatively low elevation waterway from a lotic to lentic system. The confluence of three tributaries of the Feather River and its free flowing nature has been replaced by Lake Oroville. The transport functions (sediment, nutrients etc.) normally associated with the energy of a lotic system have been replaced by an overall storage function of a lentic system. Thus, there are water quality changes accompanying this shift of ecosystems both within and downstream of the lake. The FWS is concerned about the effects of the current project operations on water quality and changes that may occur with new license conditions. We seek assurance that sufficient numbers of water quality constituents are investigated and that appropriate and rigorous protocols are followed. We seek assurance that investigations will lead to determination of operations alternatives that balance and maintain acceptable water quality standards under all operational plans and conditions set forth in the final agreement.
38. As described in the IIP, operations of the Oroville Facilities including Lake Oroville, have wide-reaching effect on riverine conditions downstream in the Feather River, Sacramento River, and San Francisco/San Joaquin Bay Delta. In addition, water supply stored in Lake Oroville is delivered to Southern California through State Water Project canals and thus has effects on growth and development within the SWP service area. There are a variety of federally listed, threatened, proposed and species of concern that occur within and are supported by suitable habitat in the project affected area. There is potential for license condition changes that could potentially adversely impact listed, proposed, and/or species of concern in areas affected by water supply deliveries (including transfers), flood control, recreation activities and other project operations. The FWS wants to assure that future license conditions and attendant PM&E measures protect listed and proposed species, assist in their recovery and prevent future listings of any species of concern that may be at risk.
39. As follow-up to the above paragraph, the operations of the Oroville Facilities are integrally linked to federal water project operations and those of other entities in the Central Valley. Coordinated decisions for water project operations, including Lake Oroville take place on a daily basis. FWS wants to assure that areal extent of investigation and content of the scope of analysis is sufficient so that ESA requirements are fully addressed with regards to

direct, indirect, cumulative, interrelated and interdependent activities. This means examining all facets of project features such as distribution and transmission lines and how their operations/maintenance practices may affect T&E species. How does the pump-back operations during the summer months affect water temperatures required for holding and rearing of steelhead and spring-run Chinook salmon in the low-flow section and in the river downstream of Thermalito Afterbay?

40. Does the increase in river water temperature that results from warmer Thermalito Afterbay releases during the spring, summer, and fall months limit the amount of suitable steelhead and salmon habitat in the river downstream of Thermalito Afterbay?
41. Direct, indirect and cumulative impacts of project facilities and operations on sediment movement and deposition, river geometry, and channel characteristics. This includes impacts on stream competence, capacity, bank stability and extent, duration, and repetition of high flow events.
42. Bedload transport, current condition of habitat potentially impacted by project and alternatives to conserve or enhance
43. Adequacy of selective withdrawal structure to maximize water temperature for anadromous salmonids.
44. Priority of salmonid habitat conservation in current operating criteria and various operating agreements
45. Introgression occurring between fall-run and spring-run Chinook populations in the Feather River due to hatchery practices and impassable migration barriers
46. At the first workgroup meeting, a presentation was given on how the water system works from reservoir to Southern California. A chart was shown on Oroville reservoir storage denoting the flood storage limits and elevations at time of year and downstream water requirements for the delta. In the presentation, it was said that the data and chart was from 1971 that DWR in Sacramento was using for those storage elevation levels and acre feet amounts. I question that information and sincerely hope that is not the case.
47. In the FERC Part 12 guidelines, the Probable Maximum Flood (PMF) is to be examined after each major flood event. The Feather River has had two major flood events since 1971; once in February 1986 and again in January 1997. The FERC Part 12 regulation guidelines also state that when new Hydro-meteorological Reports (HMR's) are issued, the PMF is to be re-examined. New HMR's (HMR 58 & 59) were issued in 1999, thus precipitating the Oroville 2100 project to be re-examined in light of the new data. I think that this has been done for the 2100 project in the last Part 12 inspection and the Work Group should be given the correct data. If not done, the question is why not?
48. The workgroup should be provided with the last FERC Part 12 inspection in written hard copy done by its Independent Consultant.
49. Oroville reservoir flood storage chart needs to be updated or obtain a copy of the latest updated chart to be provided to the Work Group.
50. What is the Hazard classification for Oroville Dam?

51. Provide the Work Group with the study data done on installing Obermeyer Gates on the emergency spillway ogee to raise the reservoir elevation in a major flood runoff event? What is the probability of this installation?
52. Provide the workgroup with the latest PMF, HMR, and PMP (probable maximum precipitation) data?
53. When was the last "Inflow Design Flood" (IDF) study done and was it done on current data?